

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A compound semiconductor light-emitting diode comprising a light-emitting layer composed of a Group III-V compound semiconductor, and a current diffusion layer provided on the light-emitting layer and composed of a Group III-V compound semiconductor, characterized in that the current diffusion layer is composed of a conductive boron-phosphide-based semiconductor and has a bandgap at room temperature wider than that of the light-emitting layer,

wherein the diode includes, in a thickness direction between the current diffusion layer and the light-emitting layer, a cladding layer composed of a Group III-V compound semiconductor, and the cladding layer has a bandgap at room temperature wider than that of the light-emitting layer and equal to or narrower than that of the current diffusion layer, and

wherein both the cladding layer and the current diffusion are composed of a boron-phosphide-based semiconductor having a boron compositional gradient such that the bandgap increases in the thickness direction from the bottom surface of the cladding layer closest to the light-emitting layer to the top of the current diffusion layer.

2. (original): A compound semiconductor light-emitting diode according to claim 1, wherein the current diffusion layer is composed of at least one species selected from among boron monophosphide, boron gallium indium phosphide represented by a compositional formula

$B_{\alpha}Ga_{\gamma}In_{1-\alpha-\gamma}P$ ($0 < \alpha \leq 1$, $0 \leq \gamma < 1$),

boron nitride phosphide represented by a compositional formula $BP_{1-\delta}N_{\delta}$ ($0 \leq \delta < 1$), and

boron arsenide phosphide represented by a compositional formula $B_{\alpha}P_{1-\delta}As_{\delta}$.

3. (currently amended): A compound semiconductor light-emitting diode according to claim 1, wherein the difference between the bandgap at room temperature of the current diffusion layer and the bandgap at room temperature of the light-emitting layer ~~accounts for~~ is 0.1 eV or more.

4. (original): A compound semiconductor light-emitting diode according to claim 1, wherein the current diffusion layer has a bandgap at room temperature of 2.8 eV to 5.0 eV.

5. (original): A compound semiconductor light-emitting diode according to claim 1, wherein the current diffusion layer has a carrier concentration at room temperature of 1×10^{19} cm^{-3} or more, a resistivity at room temperature of $5 \times 10^{-2} \Omega \cdot \text{cm}$ or less, and a thickness of 50 nm to 5,000 nm.

6. (canceled).

7. (currently amended): A compound semiconductor light-emitting diode according to ~~claim 6~~ claim 1, wherein the cladding layer is composed of a Group III-V compound semiconductor containing aluminum, gallium, and indium, and the current diffusion layer is composed of a boron-phosphide-based semiconductor containing at least one species selected from among aluminum, gallium, and indium.

8. (canceled).

9. (original): A compound semiconductor light-emitting diode according to claim 1, wherein the light-emitting layer is composed of an aluminum gallium indium phosphide mixed crystal represented by a compositional formula $Al_xGa_yIn_zP$ ($0 \leq X, Y, Z \leq 1$, $X + Y + Z = 1$), and

at least one of the current diffusion layer and the cladding layer are composed of an undoped boron-phosphide-based semiconductor to which no impurity element has been intentionally added.

10. (currently amended): A compound semiconductor light-emitting diode according to claim 1, wherein an Ohmic contact electrode is joined to the current diffusion layer ~~or the composition-graded layer.~~

11. (new): A compound semiconductor light-emitting diode according to claim 1, wherein the cladding layer and the current diffusing layer have a bandgap which increases 0.6 eV or more in the thickness direction from the bottom of the cladding layer closest to the light-emitting layer to the top of the current diffusion layer.

12. (new): A compound semiconductor light-emitting diode according to claim 1, wherein the cladding layer and the current diffusion layer have a boron compositional gradient such that the boron content increases in the thickness direction from the bottom of the cladding layer closest to the light-emitting layer to the top of the current diffusion layer.

13. (new): A compound semiconductor light-emitting diode according to claim 12, wherein the cladding layer and the current diffusion layer are composed of $B_{1-X}Ga_XP$ ($0 \leq X \leq 1$), where a portion of the cladding layer in contact with the light-emitting layer is formed of GaP ($X=1$) and a top portion of the current diffusion layer is formed of BP where X approaches 0.